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85. (New) The method of claim 12, wherein said DNA sequences comprises a nucleotide sequence derived from a cucumovirus or portion thereof.

Please cancel claims 3, 14, 15, 31-33, 48, 61, 63, 65, 69 and 74-75, without prejudice.

#### REMARKS

Claims 1, 4-12, 16-40, 46-47, 49-50, 52, 56-58, 60, 62 and 73 are pending and rejected. Claims 76-85 have been added by this amendment. Claims 3, 14, 15, 31-33, 48, 61, 63, 65, 69 and 74-75 have been canceled without prejudice. Applicants reserve their right to prosecute subject matter of the canceled claims in subsequent applications.

Claim 16 have been amended to correct dependency from canceled claim 13 to claim 12.

Claim 34 has been amended to be dependent upon claim 30 and to recite a method wherein the linker comprises intron-processing signals. Support is in the specification on page 15, lines 4-5, and original claims 30, 31 and 34.

Claim 56 has been amended to be dependent upon claim 60.

Claims 60 and 73 have been amended to change the dependency to claim 76.

Claim 76 has been added to recite a cell obtained by the method of claim 12. Support for this claim is in the specification and old claim 59.

Claim 77 has been added to recite the method wherein the DNA sequence is a furovirus replicase. Support for this claim is in the specification on page 18, lines 3 and 9.

Claims 78-82 have been added to recite methods wherein the DNA sequence is from a beet necrotic yellow vein virus, in particular a replicase gene, more particularly, from the 3' portion of the gene, and further, from about 400 bp of the gene, and specifically from about nucleotide 5178 to about 5620. Support for these claims is in the specification on page 18, line 28 to page 19 line 1; and in Example 9 on pages 42-43.

Claims 83-85 have been added to recite the method of claim 12 wherein the DNA sequence is from a potyvirus, tospovirus or cucumovirus. Support for these claims is in the specification on page 18, lines 1-3.

No new matter has been added by these amendments.

#### **Section 112, second paragraph, Rejection of claims 56-58, 60, 61, 15, 16 and 73**

Claims 56-58, 60, 61, 15, 16 and 73 remain or are rejected under 35 USC § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and claim the instant invention because claims 15, 16, 56 and 73 are dependent upon cancelled claims.

The dependency of claims 16, 56 and 73 has been corrected and claim 15 has been cancelled without prejudice, making this rejection moot. Applicants respectfully request this rejection be withdrawn.

**Section 112, first paragraph, Rejection of Claims 1, 3-12, 14-40, 46-48, 49 (amended), 50, 52, 56-58, 60-63, 65, 69, and 73-75**

Claims 1, 3-10, 14-40, 46-48, 49 (amended), 50, 52, 56-58, 60-63, 65, 69 and 73-75 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants respectfully disagree with this rejection.

The legal standard was set forth in the previous response.

Claims 3, 14, 15, 31-33, 48, 61, 63, 65, 69 and 74-75 have been canceled without prejudice, thereby making this rejection moot for these claims.

Remaining claims 1, 4-10, 15-30, 34-40, 46-47, 49-50, 52, 56-58, 60, 62, 73 and 76-85, have been amended to recite methods of using RNA that forms a dsRNA or DNA constructs that form a dsRNA wherein the nucleotide sequence is from a furovirus, potyvirus, tospovirus or cucumovirus. The specification specifically describes the use of the present methods to produce plants that have resistance to a furovirus and describes the use of furovirus sequences in such a method. Further, the specification describes the use of a portion of a replicase gene (about 442 bp) to achieve virus resistance. See Example 9. A Declaration of Jan Gielen was also submitted providing data on the furovirus resistant plants. The specification also describes that resistance is obtained to tospoviruses, potyviruses and cucumoviruses. One or more Declarations will be provided after the Suspension of Prosecution Period to provide data on resistant plants to viruses in these virus families.

Therefore, the description of the specification as filed describes to one skilled in the art that the inventor's had possession of the invention as presently claimed at the time the application was filed. Applicants submit the above amendments and remarks overcome this rejection, and respectfully request its withdrawal.

**Section 112, first paragraph, Rejection of Claims 1, 3-12, 14-40, 46-48, 50, 52, 56-58, 60-63, 65, 69 and 73-75**

Claims 1, 3-12, 14-40, 46-48, 50, 52, 56-58, 60-63, 65, 69 and 73-75 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the

specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 3, 14, 15, 31-33, 48, 61, 63, 65, 69 and 74-75 have been canceled without prejudice, thereby making this rejection moot for these claims.

Regarding claims 56-58, claim 56 has been amended to be dependent upon claim 76 which is dependent on claim 12. This amendment obviates this rejection.

Regarding remaining claims 1, 4-12, 16-30, 34-40, 46-48, 50, 52, 56-58, 60, 62, 73 and new claims 76-85, Applicants have the following remarks.

The legal standard for enablement was set forth in the prior Response.

The presently claimed invention is directed to methods for conferring resistance or tolerance to a furovirus, tospovirus, potyvirus or cucomovirus using RNA or DNA sequences from those virus families. The specification as filed describes in Example 9 the use of sequences from a furovirus (BNYVV) for producing plants with resistance to a furovirus. The methods described in the specification can be applied to other viruses and obtain resistant plants.

As pointed out by the Examiner in the Office Action of October 11, 2001, on page 5, the Declaration of Dr. Jan Gielen addresses enablement of the invention for use in plant cells with furoviruses. However, Applicants disagree with the Examiner's statement that the Declaration describes the use of a "DNA or RNA fragments comprising the entire coding sequence of a viral gene." The specification and Gielen Declaration both describe the use of a 442 bp portion of the 6746 bp replicase gene (see Genbank Accession No. D00115, attached).

Regarding viral genomes that expression PTGS suppressors, Applicants will provide data in future Declarations showing that using the method described in the present specification can be used to obtain plants resistant to viruses known to encode suppressors.

Regarding the enablement of all cell types, the presently amended claims are directed to plants cells. The amendments to the claims make this ground for rejection moot.

The above remarks, and amendments overcome and /or obviate the above grounds for rejection, and Applicants respectfully request its withdrawal.

### **Claims Rejections under 35 USC §103**

Claims 1, 3-12, 14-30, 33-40, 46-48, 49, 50, 52, 56-58, 65, 69, and 73-75 are rejected under 35 USC § 103(a) as allegedly being unpatentable over Sijen et al. in view of Fire et al., Applicants admitted state of the prior art and Keddie et al. The Office Action contends that it would have been obvious for one of ordinary skill to stably transform a plant cell with DNA construct that comprises DNA encoding sense and antisense RNA fragments following the demonstration of Fire.

Applicants disagree with this rejection.

A finding of obviousness under § 103 requires a determination of the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed subject matter and the prior art, and whether the differences are such that the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. Graham v. Deere, 383 U.S. 1 (1966). The relevant inquiry is whether the prior art suggest the invention, and whether the prior art provides one of ordinary skill in the art with a reasonable expectation of success. In re O'Farrell 853 F.2d 894, 903 (Fed. Cir. 1988). Both the suggestion and the reasonable expectation of success must be founded in the prior art and not in the Applicants' disclosure. In re Vaeck 947 F.2d 488 (Fed. Cir. 1991).

Most important, "obvious to try" a particular experiment or combination is not the appropriate standard for determining obviousness. In re Lindell, 385F.2d 453, 15 U.S.P.Q. 521 (C.C.P.A. 1967).

The cited references do not make obvious the presently claimed invention. None of the cited references teach the present invention of the use of double-stranded RNA using RNA fragments of a furovirus, potyvirus, tospovirus or cucomovirus genome or portion thereof to reduce the expression of a viral genome or portion thereof. Fire et al., describes the reduction of endogenous gene expression in *C. elegans* (see Table 1 on page 807 for list of endogenous genes tested). Fire provides no teaching that double-stranded RNA could reduce viral expression in cells. Fire also fails to provide any reasonable expectation of success for reduction of viral expression, in particular, for furoviruses.

Also, Sijen et al. provide no teaching, much less a suggestion, nor a reasonable expectation of success that sense and antisense constructs would necessarily provide resistance to viruses, in particular furoviruses, tospoviruses, potyviruses or cucomoviruses.

The above remarks overcome this rejection and Applicants request its withdrawal.

### **CONCLUSION**

The above amendments and remarks overcome or obviate the above rejections and put the application in form for allowance.

The Commissioner is hereby authorized to charge any additional fees under 37 CFR §1.17

which may be required, or credit any overpayment, to Account No. 50-1744 in the name of Syngenta.

Respectfully submitted,

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Version of Claims with Marked-up Changes

IN THE CLAIMS

Please amend the claims as follows:

1. (twice amended) A method for conferring resistance or tolerance to a furovirus, potyvirus, tospovirus or cucomovirus [virus] upon a plant cell comprising the step of: introducing into a plant cell a sense RNA fragment of a [viral] furovirus, potyvirus, tospovirus or cucomovirus genome or portion thereof and an antisense RNA fragment of said [viral] furovirus, potyvirus, tospovirus or cucomovirus genome or portion thereof, wherein said sense RNA fragment and said antisense RNA fragment form a double-stranded RNA molecule, and wherein the expression of said viral genome or portion thereof in said cell is reduced.
12. (twice amended) A method for conferring resistance or tolerance to a furovirus, potyvirus, tospovirus or cucomovirus [virus] upon a plant cell comprising the step of: introducing into a plant cell a first DNA sequence capable of expressing in said cell a sense RNA fragment of a [viral] furovirus, potyvirus, tospovirus or cucomovirus genome or portion thereof and a second DNA sequence capable of expressing in said cell an antisense RNA fragment of said [viral] furovirus, potyvirus or cucomovirus genome or portion thereof, wherein said sense RNA fragment and said antisense RNA fragment form a double-stranded RNA molecule, and wherein the expression of said viral genome or portion thereof in said cell is reduced.
16. (amended) The method of claim [13] 12, wherein said DNA sequences comprises a nucleotide sequence derived from a viral coat protein gene, a viral nucleocapsid protein gene, a viral replicase gene, a movement protein gene or portions thereof.
34. (amended) The method of claim [33] 30, wherein [said regulatory sequences comprise] the linker comprises intron processing signals.
56. (amended) A plant and the progeny thereof derived from the plant cell of claim [55] 60.
60. (amended) The plant cell of claim [59] 76, wherein said cell is virus resistant or tolerant.
73. (amended) The plant cell of claim [59] 76, wherein the expression of said viral genome or portion thereof in said cell is reduced, and wherein said DNA sequences are expressed.

Please add the following claim:

--76. (New) A plant cell obtained by the method of claim 12.

77. (New) The method of claim 12, wherein said DNA sequences comprises a nucleotide sequence derived from a furovirus replicase gene or portion thereof.

78. (New) The method of claim 12, wherein said DNA sequences comprises a nucleotide sequence derived from the beet necrotic yellow vein virus (BNYVV).

79. (New) The method of claim 78, wherein said DNA sequences comprises a nucleotide sequence derived from the replicase gene (RNA1) of the beet necrotic yellow vein virus or portion thereof.

80. (New) The method of claim 79, wherein the portion of the replicase gene from BNYVV comprises the 3' end.

81. (New) The method of claim 80, wherein the portion of the replicase gene from BNYVV is about 400 nucleotides.

82. (New) The method of claim 81, wherein the portion of the replicase gene from BNYVV is from about nucleotide 5178 to about nucleotide 5620.

83. (New) The method of claim 12, wherein said DNA sequences comprises a nucleotide sequence derived from a potyvirus or portion thereof.

84. (New) The method of claim 12, wherein said DNA sequences comprises a nucleotide sequence derived from a tospovirus or portion thereof.

85. (New) The method of claim 12, wherein said DNA sequences comprises a nucleotide sequence derived from a cucumovirus or portion thereof.--

Please cancel claims 3, 14, 15, 31-33, 48, 61, 63, 65, 69 and 74-75, without prejudice.